Energy-charged

There are two new, innovative and industry-unique products for photovoltaic (PV) modules tailor-made for use on caravans and motorhomes that will celebrate their premiere on the caravanning market in 2021: AE Shade-Resistant Solar Modules and GreenAkku® LightAir Modules

Words Peter Hirtschulz

These have been developed and marketed by the German company, Bosswerk GmbH & Co. KG. It also operates the online shop, GreenAkku.de, which among other things, is a partner company of LIONTRON®, the brand that has quickly become a market leader in the lithium battery market throughout Europe.

The foundation stone for GreenAkku® was laid in 2003 by Wolfgang Felzen who was inspired to build a company that deals specifically with the environmentally-friendly generation, sensible storage and practical use of electricity after spending some time sailing around the world, which made him very familiar with limited use of power and natural power generation. Bosswerk with GreenAkku® and LIONTRON® are still family-owned and managed by Wolfgang Felzen and his sons.

When GreenAkku® went online in 2012, sales "exploded" and it now has a turnover of up to €3 million per month. Wolfgang Felzen attributes this success to the enormous innovative power of his companies: *"People recognise our know-how and the practice-proven and technically innovative development of our products. We not only develop existing components further, we also invent completely new solutions."* In particular, he is referring to his premiere product GreenAkku® LightAir Module where he succeeded in developing a module system that has all the capabilities of a conventional (glass) module but is much lighter and has improved performance.

While LIONTRON® has achieved market leadership in the field of lithium batteries through strong performance, customer-friendly concepts, plus an intensive focus on service and environmental compatibility, GreenAkku® adds another attribute: technically customised products.

In addition to its products for domestic use, GreenAkku® primarily concentrates on environmentally-friendly energy generation through photovoltaic modules for caravans and motorhomes and will introduce the AE

Shade-Resistant Solar Modules and GreenAkku® LightAir Modules on the caravanning market in 2021.

AE Shade-Resistant Solar Modules

The module from AE Solar, which is marketed by GreenAkku®, is shade-resistant and avoids so-called hotspots of individual cells in the string. Thanks to the specially developed system of bypass diodes between all cells of the module, the electricity in the string can continue to flow even in the shade. As a result, this module class achieves up to 30 percent more yield on average compared to all conventional solar modules.

The scientifically recognised institute Fraunhofer CSP (Fraunhofer Centre for Silicon Photovoltaics CSP) has certified that the product only loses three percent of power when one cell is shaded, compared to 30 percent lost with a standard module. The trick: when it's in the shade, the string electricity takes the path via the bypass diode while the remaining 12 cells in the cell string continue to produce electricity. AE Solar offers a 30 year performance guarantee and a 12 year product guarantee on its modules (165 Wp (Watt peak), 195 Wp, 320 Wp), which are developed and produced according to German quality standards.

GreenAkku®-LightAir modules

The newly developed GreenAkku®-LightAir modules consist of a very thin, lightweight and flexible module material which is integrated into an aluminium frame. The modules have the same stability as a framed glass module but are much lighter. The module material consists of ethylene-tetrafluoroethylene copolymer (abbreviated to ETFE). ETFE is a light but weather-resistant plastic that is very translucent and also salt-water resistant. This means that the modules can also be used in maritime areas or similar environmental influences. ETFE is very supple and flexible, but does not contain any additional plasticisers so is very durable and environmentally friendly.

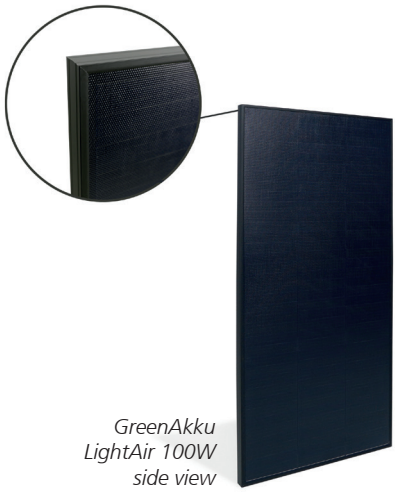
Instead of standard solar cells, GreenAkku® uses something called 'shingle technology'. In contrast to conventional modules, with this technology the cells are not connected by conductor tracks, which inevitably always leave a gap of one to two millimetres between the cells. With shingle technology, the cells are laid on top of each other like shingles and connected with electrically conductive adhesive. This reduces the unused area on or between the module, which in turn increases module efficiency.

Smaller modules mean that otherwise unused space on a motorhome can be used to generate energy so a comparably higher yield is achieved on the same area. The framed but lightweight modules always maintain a certain distance from the vehicle body due to their special design. The special way they are mounted means the modules are also ventilated from behind which avoids extreme proximity of the module to the body that can lead to heat accumulation which usually leads to performance losses with conventional flexible modules. This innovative concept and intelligent design means GreenAkku® offers the advantages of flexible modules without the disadvantages of conventional heavy modules.

The special product material and construction method mean that the heavy glass panel that is common with these modules is obsolete. The new modules save at least half the weight of conventional technology without giving up its torsional rigidity. This means it has the same stability but at a lower weight - a factor that plays an important role in the weight restrictions of caravans and motorhomes and makes them particularly attractive for use in the mobile sector where the 3.5 tonne limit can easily be exceeded with just a few additional items fitted.

However, the new modules are not only suitable for mobile use. There are also numerous possibilities for use in the domestic environment. If the large modules, some of which weigh over 20 kg, are not suitable, the ultra-light LightAir modules from GreenAkku® can also be used on the balcony or the wall of a building.

Company boss Wolfgang Felzen is confident: *"We plan to become the market leader in Europe with our GreenAkku® PV modules within 12 months, as LIONTRON® has already achieved in the lithium battery market."*



GreenAkku LightAir 100W side view

GreenAkku LightAir 100W back view